WHAT IS CLAIMED IS:

1. An injection molding system comprising:

a manifold having a plurality of manifold melt channels for conveying a melt stream;

a plurality of nozzles, wherein each nozzle has a nozzle melt channel fluidly connected at a first end to a respective manifold melt channel and at a second end to a mold gate of a separate mold cavity, the nozzle further including an actuated valve pin slidably positionable within the nozzle melt channel having a head portion for opening and closing the mold gate, wherein the valve pin has a flow control surface upstream of the head portion thereof that is slidably positionable for controlling the flow rate of the melt stream through the nozzle melt channel towards the mold gate.

2. The injection molding system of claim 1, wherein each mold cavity is of substantially equal volume.

3. The injection molding system of claim 1, wherein at least one mold cavity is of a different volume.

4. The injection molding system of claim 1, wherein a position of the valve pin flow control surface within the nozzle melt channel is determined based on processing information received from at least one processing sensor.

5. The injection molding system of claim 4, wherein the at least one processing sensor receives processing information from the nozzle melt channel.

6. The injection molding system of claim 5, wherein the at least one processing sensor is either a pressure sensor or a temperature sensor.

7. The injection molding system of claim 4, wherein the at least one processing sensor receives information from the mold cavity.

8. The injection molding system of claim 7, wherein the at least one processing sensor is either a pressure sensor or a temperature sensor.

9. The injection molding system of claim 1, wherein the flow control surface is a radially expanded portion of the valve pin that constricts the flow of the melt stream when positioned within a portion of the nozzle melt channel having a complementary shape to that of the flow control surface.

10. An injection molding system comprising:

a plurality of nozzles, wherein each nozzle has a melt channel for conveying a melt stream into a separate mold cavity through a mold gate; and

an actuated valve pin slidably positionable within the nozzle melt channel having a tip portion for closing the mold gate to stop the flow of the melt stream into said mold cavity and a first flow control surface on an upstream portion of the valve pin for controlling a flow rate of the melt stream within the melt channel, wherein the first flow control surface has a corresponding second flow control surface as a portion of the melt channel such that the flow rate of the melt stream is reduced when the first flow control surface of the valve pin is slidably positioned at or near the second flow control surface of the nozzle melt channel.

11. The injection molding system of claim 10, wherein each mold cavity is of substantially equal volume.

12. The injection molding system of claim 10, wherein at least one mold cavity is of a different volume.

13. The injection molding system of claim 10, wherein the plurality of nozzles are hot runner nozzles operating at a first temperature.

14. The injection molding system of claim 13, wherein the flow rate of melt through each hot runner nozzle is independently controlled such that the flow rate of melt through the respective nozzle melt channel is reduced when the temperature of the hot runner nozzle is reduced below the first temperature.

15. The injection molding system of claim 13, wherein the flow rate of melt through each hot runner nozzle is independently controlled such that the flow rate of melt through the respective nozzle melt channel is increased when the temperature of the hot runner nozzle is increased above the first temperature.

16. The injection molding system of claim 10, wherein the plurality of nozzles are hot runner nozzles operating at a first pressure.

17. The injection molding system of claim 16, wherein the flow rate of melt through each hot runner nozzle is independently controlled such that the flow rate of melt through the respective nozzle melt channel is increased when the pressure of the hot runner nozzle is reduced below the first pressure.

18. The injection molding system of claim 16, wherein the flow rate of melt through each hot runner nozzle is independently controlled such that the flow rate of melt through the respective nozzle melt channel is decreased when the pressure of the hot runner nozzle is increased above the first pressure.

19. A method of injection molding comprising:

providing a plurality of mold cavities of substantially equal volume, such that each mold cavity is fed by a single mold gate;

injecting a molten material via an injection molding manifold into a plurality of hot runner nozzles, wherein each nozzle is in fluid communication with a respective mold cavity via a respective mold gate, and each nozzle having a nozzle melt channel with a valve pin therein; and

independently actuating each valve pin in its respective nozzle melt channel into an injection open position that is defined as a distance D between a flow control surface of the valve pin and the mold gate, wherein a distance D varies from one nozzle to another such that each mold cavity is filled with substantially the same amount of molten material during an injection cycle.

20. The method of claim 19, where the injection open position defined by the distance D of each nozzle is determined by a processing sensor located along the respective nozzle melt channel.

21. The method of claim 20, wherein the processing sensor is either a temperature sensor or a pressure sensor.

22. A method of injection molding comprising:

providing a plurality of mold cavities, such that each mold cavity is fed by a single mold gate;

injecting a molten material via an injection molding manifold into a plurality of hot runner nozzles, wherein each nozzle is in fluid communication with a respective mold cavity via a respective mold gate, and each nozzle having a nozzle melt channel with a movable valve pin therein, wherein the valve pin has a tip portion to close the mold gate and a flow control surface located in the nozzle melt channel upstream from said tip portion; and

reducing the amount of molten material injected through each nozzle into each mold cavity by individually and independently moving the valve pin flow control surface in the nozzle melt channel toward its respective mold cavity before closing each mold gate with the tip portion of the valve pin.

23. The method of claim 22, wherein an injection position is determined by a processing sensor located along the respective nozzle melt channel.

24. The method of claim 23, wherein the processing sensor is either a temperature sensor or a pressure sensor.

25. The method of claim 22, where each mold cavity has substantially the same volume.

26. The method of claim 22, wherein at least one mold cavity has a different volume.